

(No Model.)

E. C. FASOLDT.

PRESSURE REDUCER FOR STEAM OR OTHER FLUIDS.

No. 449,071.

Patented Mar. 24, 1891.

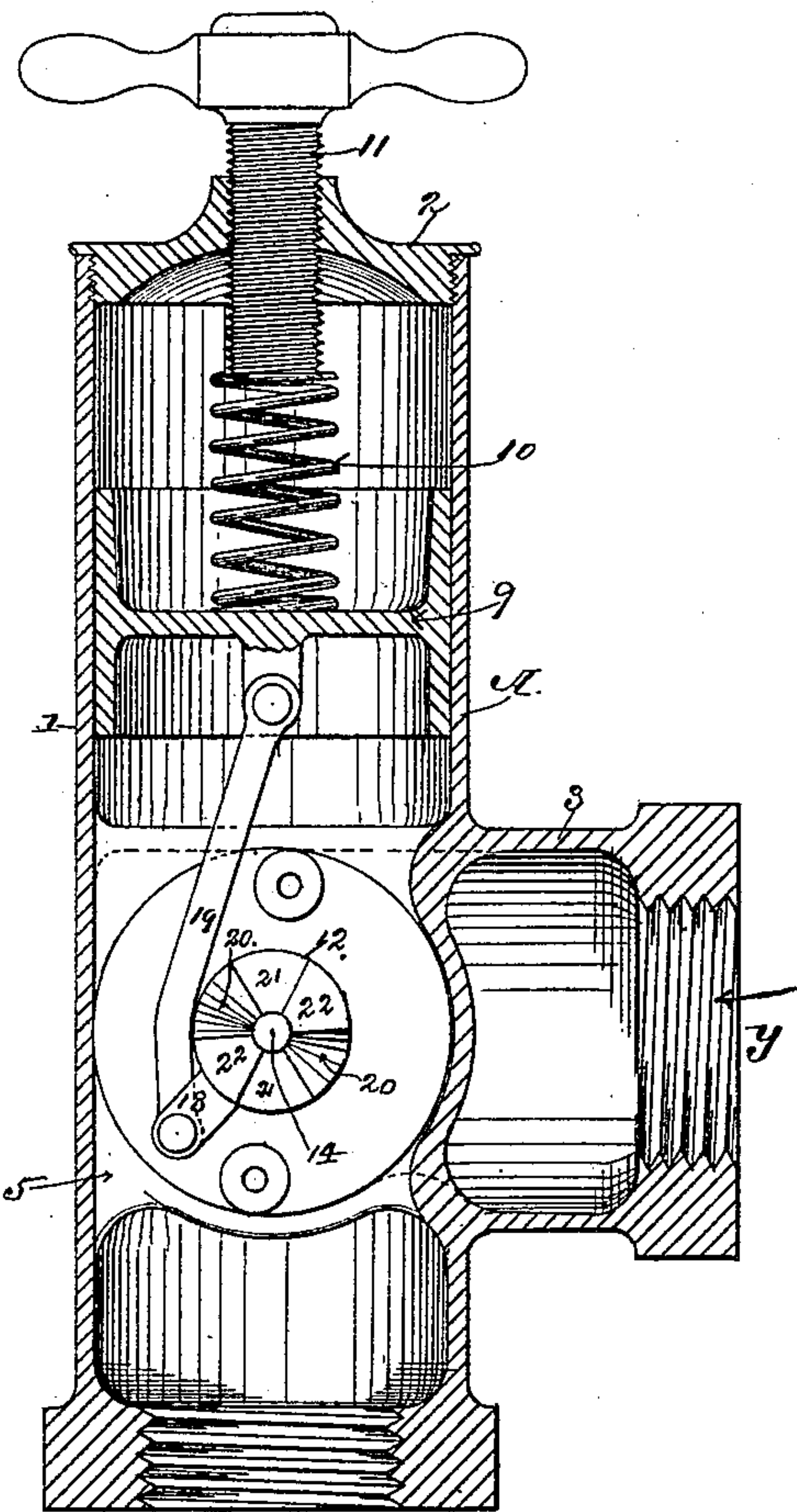


FIG. 1

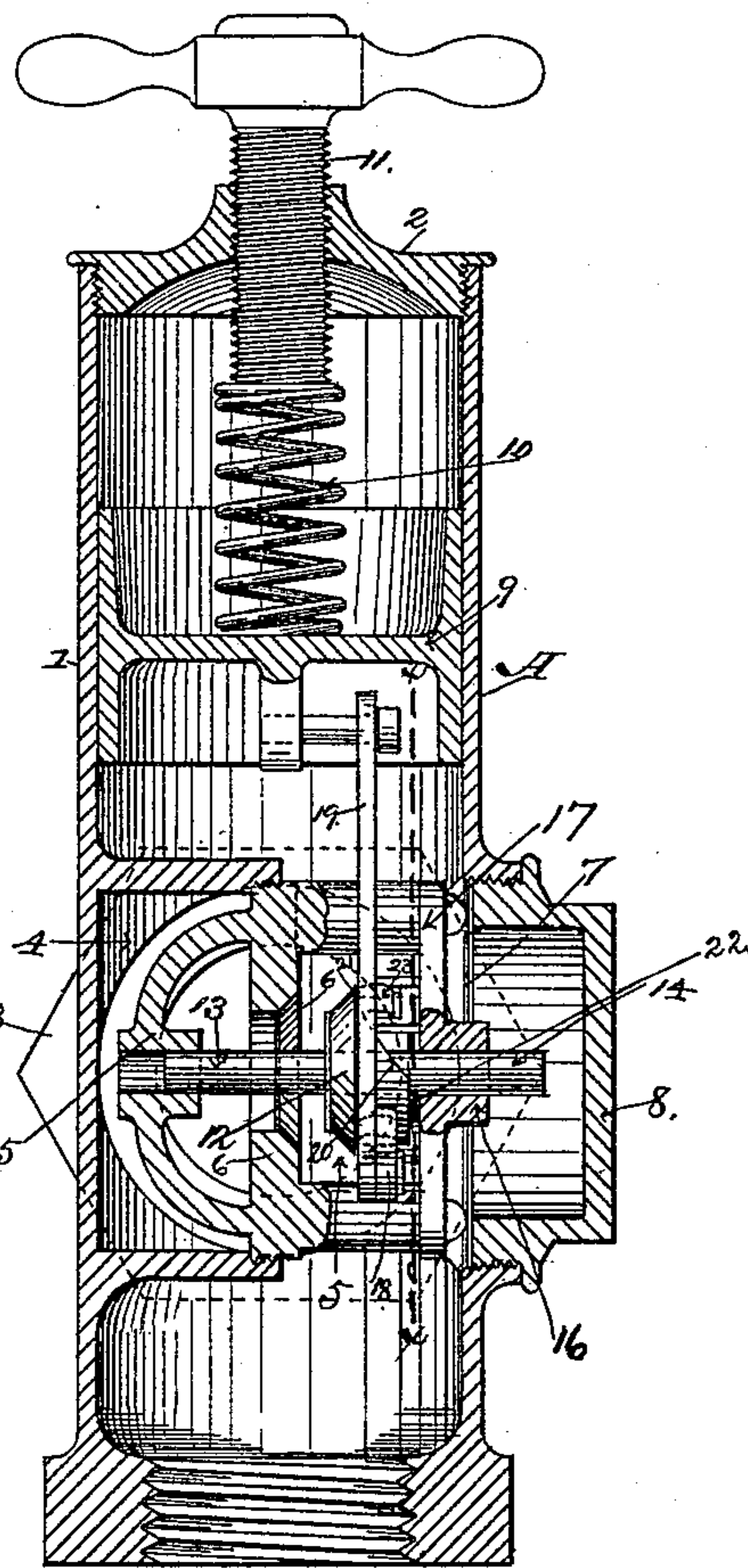


FIG. 2.

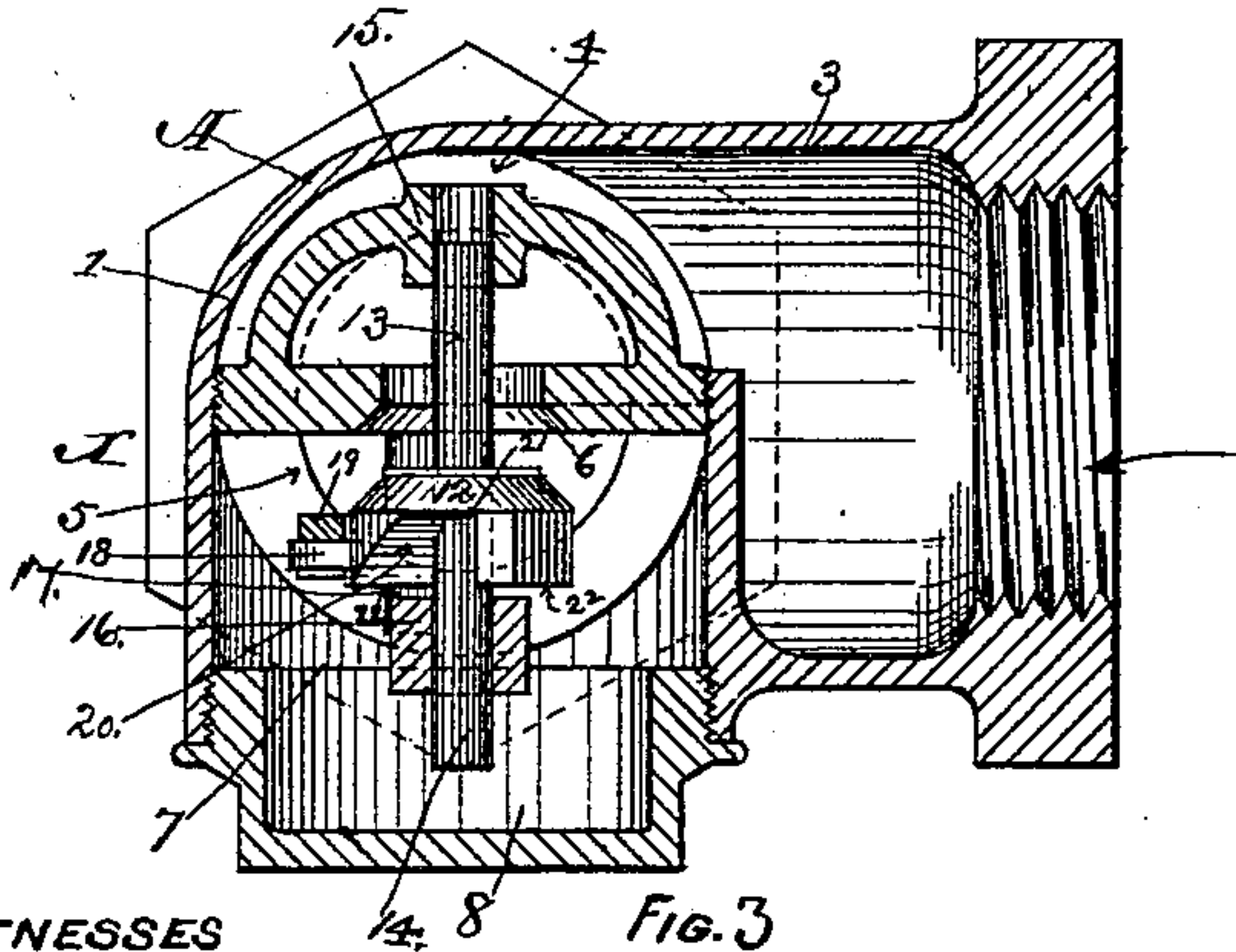


FIG. 3

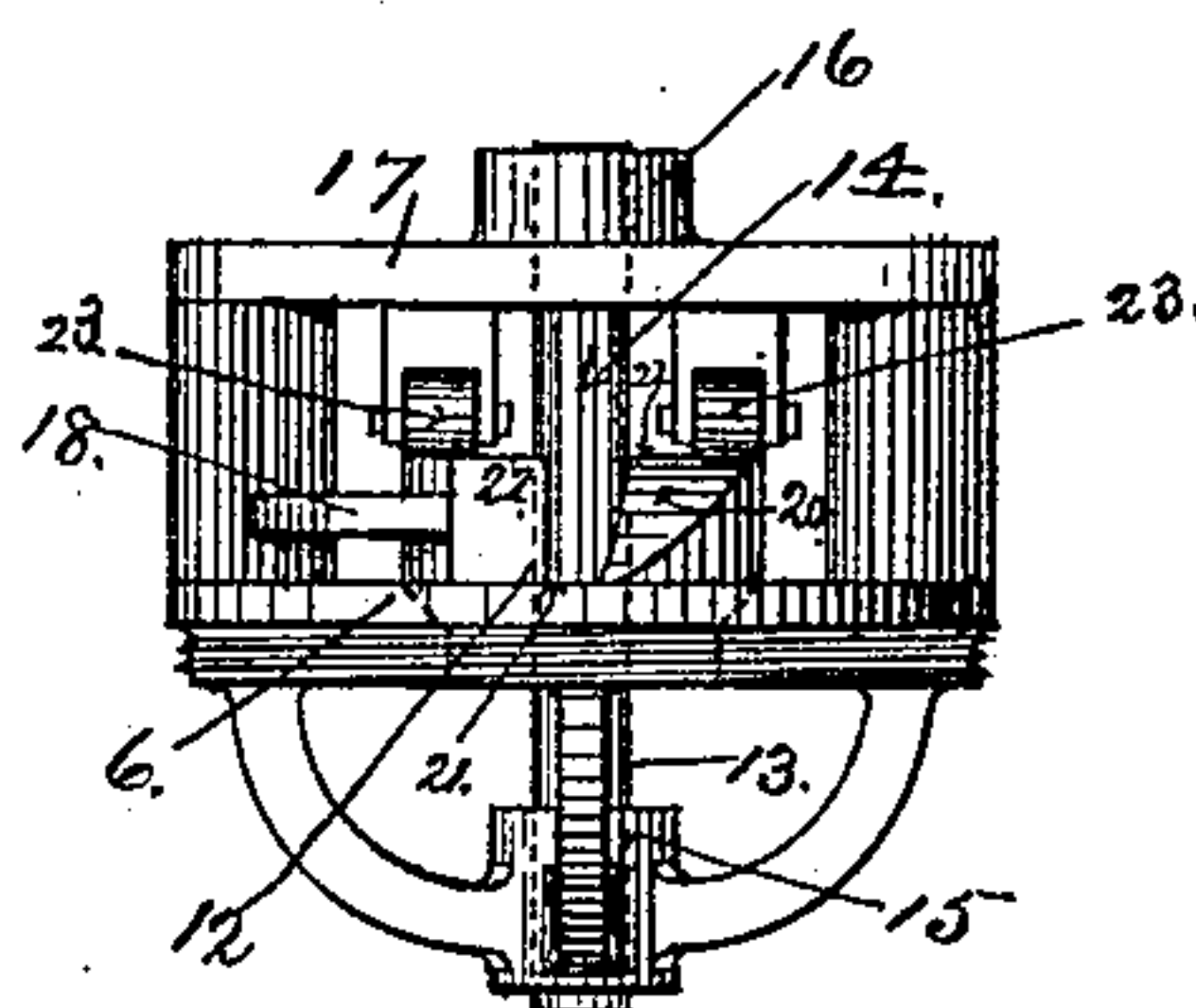


FIG. 4

WITNESSES

S. B. Brewster
F. W. Sabod

INVENTOR:

ERNEST C. FASOLDT,

by William H. Loo,
attorney.

UNITED STATES PATENT OFFICE.

ERNEST C. FASOLDT, OF ALBANY, NEW YORK, ASSIGNOR OF ONE-HALF TO
JOHN BOYD THACHER, OF SAME PLACE.

PRESSURE-REDUCER FOR STEAM OR OTHER FLUIDS.

SPECIFICATION forming part of Letters Patent No. 449,071, dated March 24, 1891.

Application filed September 29, 1890. Serial No. 366,583. (No model.)

To all whom it may concern:

Be it known that I, ERNEST C. FASOLDT, of the city and county of Albany, in the State of New York, have invented new and useful Improvements in Pressure-Reducers for Steam and other Fluids, of which the following is a specification.

My invention relates to an automatic apparatus for reducing the pressure of fluids from a higher to a lower density and maintaining said lower pressure in a uniform manner; and the object of my invention is to provide a simple, effective, and reliable device for the above-named purpose. This object I attain by the mechanism illustrated in the accompanying drawings, which are herein referred to and form part of this specification, and in which—

Figure 1 is a vertical section of my apparatus at the line X X on Fig. 3 with the valve, valve-seat, spring, and adjusting-screw shown in elevation and the valve being raised from the valve-seat. Fig. 2 is a vertical section taken at right angles to the line X X on Fig. 2, the valve raised from the valve-seat, the spring, and the adjusting-screw being shown in elevation. Fig. 3 is a horizontal section at the line Y Y of Fig. 1; and Fig. 4 is a detached side elevation of the valve-seat, valve, and bridge-piece.

As represented in the drawings, A indicates the casing for containing the operative parts of my pressure-reducer. Said casing consists of a cylindrical body 1, provided with a bonnet 2, an inlet branch 3, and a chamber 4, into which the opening of the inlet branch leads. The chamber 4 is partitioned from the bore of the cylindrical body 1 so as to leave a clear passage 5 between the opposite ends of said body. A valve-seat 6 is fitted into the open side of the chamber 4, and an opening 7, through which access is obtained to said valve-seat, is provided with a cap 8 for closing it. The cylindrical body 1 is bored at one end to receive a piston 9, which is fitted to slide easily therein, and on the outer face of said piston a spring 10 is fitted to exert its pressure to force said piston inwardly. An adjusting-screw 11, which is fitted to screw into the bonnet 2, bears against the outer end of the spring 10 for the purpose of regulating the resistance of said spring to the required pressure.

A valve 12 is fitted to close the opening in the valve-seat 6, and said valve is adapted to receive a dual movement—a rotatory motion on its central axis and a sliding motion in line with said axis. The inner face of the valve is provided with a central stem 13, and its opposite face has a corresponding stem 14, both of said stems ranging in exact line with each other. The stem 13 is fitted to move in a guide 15, formed on the inner face of the valve-seat 6, and the stem 14 is fitted to move in a guide 16, formed on a bridge-piece 17, which is attached to the outer face of said valve-seat. The valve 12 is provided with a radial arm 18, which is connected to the piston 9 by a rod 19 in such manner that the reciprocating movements of said piston will impart an oscillatory motion to the valve. The outer face of the latter is provided with a series of inclined planes 20, with intervening levels or landings 21 and 22, the first being at the base of the planes and the others at the apex of the same. Said inclined planes form a series of cam-faces, which bear against friction-wheels 23, journaled on the bridge-piece 17, to effect the closing movement of the valve 12 when the piston 9 is moved in a direction to effect the closure.

The operation of my invention is as follows: The fluid under extreme pressure enters the inlet branch 3, and, passing into the chamber 4, acts upon the inner face of the valve 12 and tends to force the latter away from its valve-seat 6. Passing through the opening of the latter, the fluid-pressure acts against the exposed surface of the piston 9 to force the latter outwardly. This movement of the piston imparts an oscillating movement to the valve 12 in a direction that will carry the inclined planes 20 to bear against the friction-wheels 23. Thereby the valve will be forced to move toward its seat until the resistance of the spring prevents the further outward movement of the piston 9, or, in other words, until the resistance of said spring is equal to the effective pressure of the fluid on the piston, and thereby an equilibrium will be established to allow a proper quantity of the fluid under high pressure to enter the body of the apparatus to maintain the required pressure therein. When the latter is exceeded, the piston

9 is moved to close the valve 12, and when the pressure in the apparatus falls below the normal point the piston is moved to oscillate the valve 12, so that the pressure, acting against the inner face of the valve 12, will force it from its valve-seat, thereby allowing the high-pressure fluid to flow into the apparatus until an equilibrium is established therein. By means of the adjusting-screw 11 the degree of reduction of pressure can be varied to suit circumstances.

By reason of operating the valve 12 as herein shown and described, so that the opening and closing movements of said valve will not be directly effected by a piston or diaphragm, the fluttering pressure incident to the use of a valve that is operated directly by a piston or diaphragm is entirely avoided, and a perfectly-uniform pressure of the fluid can be maintained in the apparatus.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a pressure-reducer, a casing provided with inlet and outlet openings, a valve interposed between said inlet and outlet openings and provided with spirally-formed cam-faces, said valve being fitted to receive a combined

oscillating and reciprocating motion, and fixed bearings fitted to take against said cam-faces, in combination with a piston or diaphragm which is connected to said valve for the purpose of imparting an oscillatory motion to the latter, as herein specified.

2. In a pressure-reducer, the combination of a casing provided with an internal chamber, an inlet-opening leading into said chamber, a valve for opening and closing the communication between said chamber and the interior of the casing, said valve provided with spirally-formed cam-faces, bearings which are held in a fixed position to take against said cam-faces during the oscillatory movement of said valve, a spring-resisted piston or diaphragm connected to said valve for the purpose of imparting an oscillating movement thereto, and a spring fitted to bear against said piston for the purpose of resisting the pressure of the fluid thereon, substantially as specified.

ERNEST C. FASOLDT.

Witnesses:

WM. H. LOW,
S. B. BREWER.